

CLAIMS

1. An ophthalmic device which comprises a holographic element comprising a medium and, disposed therein, a hologram, wherein an optical characteristic of the element changes as a result of a variation of a physical property of the medium, and wherein the variation arises as a result of interaction between the medium and an analyte present in an ocular fluid.
2. A device according to claim 1, wherein the medium is polymeric.
3. A device according to claim 2, wherein the medium is obtainable by the polymerisation of monomers including acrylamide.
- 10 4. A device according to any preceding claim, wherein the holographic element does not contain silver.
5. A device according to any preceding claim, wherein the interaction is a chemical reaction.
6. A device according to claim 5, wherein the reaction is reversible.
- 15 7. A device according to any preceding claim, wherein the analyte is glucose.
8. A device according to claim 7, wherein the medium comprises a phenylboronic acid group.
9. A device according to claim 8, wherein the medium is obtainable by the 20 polymerisation of monomers including 3-acrylamidophenylboronic acid or 5-fluoro-2-methacrylamidophenylboronic acid.
10. A device according to claim 8 or claim 9, wherein the medium comprises a group which is capable of repelling lactate, the group comprising a substantial negative charge.
- 25 11. A device according to claim 10, wherein the boron atom of the boronic acid group carries the substantial negative charge.
12. A device according to claim 10 or claim 11, wherein the medium is formed by the polymerisation of monomers including acrylamidoglycolic acid.
13. A device according to any of claims 7 to 12, wherein the medium 30 comprises an amine group.
14. A device according to any preceding claim, which is a contact lens.
15. A device according to any of claims 1 to 13, which is implantable.

16. A method of detection of an analyte in an ocular fluid, which comprises detecting any change of the optical characteristic of the holographic element of a device according to any of claims 1 to 15 with the fluid, in the eye.
17. A method for the production of a device according to claim 14, which  
5 comprises contacting the holographic element with a contact lens, wherein the contacted regions of the element and the lens are cross-linkable; and cross-linking said regions.